

REMARKS

Reconsideration and withdrawal of the rejections set forth in the Office Action dated February 23, 2007 are respectfully requested. Applicants petition the Commissioner for a 3-month extension of time: A separate petition accompanies this amendment.

I. Amendments to the Claims

Claim 19 has been amended as follows:

1. The preamble has been amended to recite the nature of the field to be interrogated by the apparatus, originally specified in the optical detector element of the claim;
2. The optical light source now includes the limitation of now-cancelled claim 21 that the light source is designed for illuminating the field at each of a plurality of different illuminating wavelengths;
3. The optical detector has been amended to more clearly recite its function: to measure light intensity from the PREs and other light-scattering entities in the field at each of the plurality of different illuminating light frequencies, as disclosed, for example, on page 22, lines 2-5;
4. The image processor has been amended to more clearly specify its function: to construct from signals received from the detector, values of a spectral emission characteristic of the PREs and other light scattering entities in the field, based on the light intensity measured at each of the different illuminating frequencies, and a computer image of the positions and values of the spectral emission characteristic of individual PREs and other light-scattering entities present in the field, as disclosed, for example, page 22, lines 10-19.

II. Rejections under 35 U.S.C. §102(e)

Claims 19 22-26, 28 and 29 stand rejected under 35 U.S.C. §102(e) as anticipated by King *et al.* (U.S. Patent No. 5,633,724).

This rejection of these claims is respectfully traversed in view of the foregoing claim amendment and following remarks:

A. Analysis

A. The claimed invention

The claimed invention is directed to an apparatus that is capable of detecting and discriminating PREs and other light scattering entities in a field, based on a spectral emission characteristic that is determined from light-intensity measurements at each of a plurality of illuminating wavelengths. The apparatus includes:

- (a) an optical light source for illuminating the field at each of a plurality of different illuminating light frequencies,
- (b) an optical detector for measuring light intensity from the PREs and other light-scattering entities in the field at each of the plurality of different illuminating light frequencies,
- (c) an image processor operatively connected to the detector for constructing, from signals received from the detector, values of a spectral emission characteristic of the PREs and other light scattering entities in the field, based on the light intensity measured at each of the different illuminating frequencies, and a computer image of the positions and values of the spectral emission characteristic of individual PREs and other light-scattering entities present in the field,
- (d) discriminator means for discriminating PREs with a selected spectral characteristic from other light-scattering entities in the computer image, based on a comparison of a selected spectral characteristic of PREs and other light-scattering entities in the field determined over said different spectral wavelengths, and
- (e) output means for displaying information about the field based on the information about the selected PREs.

The apparatus allows an operator/investigator to interrogate a field of PREs and other light-scattering entities in the field, and to distinguish PREs in the field from one another and from other light-scattering entities in the field based on one or more of a variety of spectral characteristics, such as spectral peak intensity, width at half peak height, polarization, and pulse or time response, that can only be determined from spectral emission over a plurality of wavelengths (see, for example, pages 13-17 of the specification).

B. The King reference. U.S. Patent No. 5,633,724 ("King") discloses an apparatus for detecting light-emitting entities, such as fluorescent particles, in a field. Although the King apparatus can be operated at a variety of selected wavelengths, for detecting and discriminating light-emitting entities having different spectral wavelengths, as noted by the Examiner, it is not designed to (i) measure light intensity at the same wavelength as the illuminating wavelength (ii) determine a spectral characteristic of entities in the field (e.g., PREs and other light-scattering entities) that require for their determination, light-intensity measurements at each of a plurality of different wavelengths, and (iii) discriminate PREs in the field from one another and from other light-scattering particles based on such selected spectral characteristic (that is, a spectral characteristic that is only determinable from spectral emissions at each of a plurality of wavelengths).

In particular, King is primarily concerned with detecting fluorescent particles in a field. As such, the illuminating wavelength is selected to illuminate the field at or near the fluorescent particles' spectral excitation wavelength, and the optical detector is selected to measure light intensity at or near the particles' spectral emission wavelength, which is substantially lower in frequency. This is in contrast to the operation of the claimed invention, in which the optical detector functions to measure light intensity at each of the different selected illuminating frequencies.

Because King is concerned with mapping particles based on light intensity measured at a single wavelength, e.g., the fluorescence emission wavelength of the particles, King does not show or suggest an image processor designed to construct,

from signals received from the detector, values of a spectral emission characteristic of the PREs and other light scattering entities in the field, based on the light intensity measured at each of the different illuminating frequencies. As discussed above, this element of the claimed invention allows each of a plurality of PREs in the field to be distinguished from one another and from other light-scattering entities in the field, on the basis of a spectral characteristic, such as peak wavelength (which will vary with PRE size and composition), peak intensity, width at half peak height, width in the image plane, polarization, and pulse or time response that can only be determined from light-intensity measured at each of a plurality of illuminating wavelengths.

Rather, the image processor in King is designed to record a spectral emission from particles in a field at a given narrow band of frequencies, e.g., the fluorescence emission frequency band of the particles, and to then detect the presence of particles which fluoresce at that band.

As such, the King apparatus cannot be used to characterize and discriminate particles such as PREs in a field, based on a spectral characteristic, such as spectral peak intensity, width at half peak height, polarization, and pulse or time response, that are determined from elastic light scattering over a plurality of illuminating wavelengths.

C. Analysis. The standard for lack of novelty, that is, for anticipation, is one of strict identity. To anticipate a claim for a patent, a single prior source must contain all its essential elements. M.P.E.P. § 2131.

For the reasons discussed above, King does not show or suggest the image processor element of the claimed invention, as currently amended. Therefore, the King reference cannot be said to anticipate claim 19, or any of the claims dependent thereon.

Nor would it have been obvious to modify the King reference to include the capability of the currently claimed invention of being able to determine and discriminate PREs based on spectral emission characteristics that can be determined only from a plurality of spectral emission measurements. Nowhere does

King discuss such a capability nor the advantages thereof, in terms of being able to discriminate PREs from one another and from other light-scattering entities in a filed, based on a variety of characteristics other than their spectral emissions at a single wavelength.

III. Conclusions

In view of the foregoing, the applicants submit that the claims 19, 20, 22, 24-26, 28, and 29 now pending in the application are in condition for allowance. A Notice of Allowance is therefore respectfully requested.

If in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is encouraged to call the undersigned at (650) 838-4401.

Respectfully submitted,
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